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| Fidonet HAM/PACKET Digest - For up to date HAM/PACKET info |
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|
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E D I T O R I A L S

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Happy New Year to you all!

In this issue you will find some pretty helpful text. There is a list of Amateur Radio suppliers and their phone numbers, a chart of meteor shower times and places, and last but not least...something new. Free software by mail!

A few more surveys have been received this month, so just in case some of you didn't get Issue 6 that had the survey form in it, I have included it once again in this issue. Let me hear from you, your opinions are needed as are your articles.

73 de Brian Murrey - Editor KB9BVN

<Soon to be on Packet>

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B U L L E T I N S

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ARRL Awards Grant for HF Packet Research

For Immediate Release

January 3, 1990

Newington, CT -- The American Radio Relay League (ARRL) made its first technology grant of more than \$1000 to a team of investigators headed by Stephen Hall, WM6P, of Simi Valley, California, for research in diversity reception of high frequency (HF) packet radio signals. The objectives of this work are to investigate the benefits of diversity reception for HF packet radio, design practical diversity antenna systems, modem characteristics, and receiver design for diversity.

Co-investigators in the team are Andy Demartini, KC2FF, of Clearwater, Florida, Wally Linstruth, WA6JPR, of Santa Barbara, California, Bill Lake, WB6RIJ, also of Santa Barbara, Herb Duncan, WE7L, of Sierra Vista Arizona, and Peter LaCount, W8UXD, also of Sierra Viesta.

Funds provided under this grant are for purchase of equipment, electronic parts and other out-of-pocket expenses in connection with this research. The team members donate their volunteer labor and much of their own equipment in carrying out this research.

For further information, contact:

Paul Rinaldo, W4RI
Tel 203 666 1541
Fax 203 665 7531

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A R T I C L E S

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UoSAT-OSCAR-11 Bulletin - 207 12/22/89

**** UoSAT-OSCAR-11 BULLETIN - 207 22nd December 1989 ****
UoSAT MISSION CONTROL CENTRE
University of Surrey, Guildford, Surrey, GU2 5XH, England

UOSAT 2 COMPUTER STATUS INFORMATION

FAD1 OPERATING SYSTEM V2.0
TODAY'S DATE IS 23 /12 /89
UNIVERSAL TIME IS 15 :43 :47 DAY 7
AUTO MODE IS SELECTED
SPIN PERIOD IS - 225
Z MAG FIRINGS = 0
+ SPIN FIRINGS = 1
- SPIN FIRINGS = 0
RAM WASH POINTER AT BAC2
WOD COMMENCED 23 /12 /89 AT 0 :0 :10
WITH CHANNELS 10 ,11 ,19 ,29 ,
LAST CMD RECEIVED WAS 109 TO 0 WITH DATA 0
ATTITUDE CONTROL INITIATED, MODE 1
DIGITALKER ACTIVE

** UoSAT-D & E LAUNCH CAMPAIGN **

The UoSAT-D and UoSAT-E spacecraft have been successfully integrated with the Ariane Structure for Auxiliary Payloads (ASAP) and are now waiting for launch on 11 January at 01:34 GMT - alongside SPOT-2 and the four AMSAT Microsats. The ASAP, UO-D & E and the four AMSAT Microsats shared a large clean room at the Ariane launch complex. With six spacecraft being worked on simultaneously, the scene was one of considerable activity! Most of the UoSAT launch team has now returned from French Guiana after preparing the satellite for integration and

carrying out detailed functional check-out procedures. Martin Sweeting G3YJO and Neville Bean G8NOB have returned to UoS, whilst Jeff Ward K8KA has travelled to the USA. Maarten "Max" Meerman, G7DQE from UOSAT and Dave Cowdin, WD0HHU from AMSAT-NA remain in Kourou to 'baby-sit' the UoSATs/Microsats and trickle charge their batteries during their wait for launch in January.

The completed composite (SPOT + UoSATs/Microsats + fairing) will remain in the Assembly Hall over the Christmas period. On January 3rd, the composite will be moved to the launch pad and integrated onto the launcher. The UoSAT launch campaign went very smoothly - which was as well since the satellites and ground support equipment were delayed for 5 of the 10 days of the campaign! Systems and payloads on both spacecraft are performing nominally. Arianespace provided a very professional yet friendly service. Details of initial operations, telemetry formats and equations will be published early in the new year as

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soon as they are finalised. However, it is most likely that initial operations on both spacecraft will utilise an enhanced version of the FORTH software used on UoSAT-2. This software provides the necessary facilities to perform initial check-out and attitude control prior to deployment of the gravity gradient boom used to stabilise the spacecraft in its final earth pointing configuration.

** AO-13 OPERATING SCHEDULE **

The following information is provided by AMSAT-DL.

AO-13 TRANSPONDER SCHEDULE

MODE B MA 000 TO MA 110

MODE JL MA 110 TO MA 145

OFF MA 145 TO MA 150 BAHN LAT +3.6 deg

S BEACON MA 146 TO MA 147 BAHN LON 179.4 deg

MODE S MA 147 TO MA 160

MODE B MA 150 TO MA 255

OMNI ANT MA 225 TO MA 035

AMSAT OSCAR-10 is currently available for whole orbit operation via the mode B transponder. ** Reports received from:- Angus Newman, Birger Lindholm, K9CIS Thanks for all of the reports received this year, Merry Christmas and a Happy New Year from "The UoSAT Team".

Satellite info from Europe - Peter Vekinis

This is an article I wrote for CQ and World radio magazines on TVRO and their use in ham radio bands. THESE ARE REAL CHEAP SYSTEMS (less than \$300 complete!).

SATELLITE TELEVISION, The European way...

THE CHEAPO HAM WAY...

OR HOW TO GET INTO TV RECEPTION IN THE 10GHz AND 1296MHz
bands for less than \$300!!!!

By Peter Vekinis, EI4GV/KC1QF/ON9CGV

Although the US started the home TVRO (Television receive only) revolution, Europe seems to have taken it up to a new level.

This is due to two factors: Firstly because TVRO systems are really inexpensive this side of the Atlantic, and secondly, because cable is not promulgated here as much as it is in the United States.

LOW END TVRO GALORE

Although there are more than 70 satellites over Europe, some of them are specific for home reception. Signals are transmitted in the 11GHz band (the Ku band) making receivers and antennas much smaller.

The satellite everyone here is watching is Astra, Luxemburg owned and operated, carrying services such as Sky Channel, a general program 20 hours/day channel, Sky News, a CNN-look alike, Sky Movies, Lifestyle, Screen Sport and MTV (Music Television). It also carries Veronique, a multilingual service offering French, English, German and Dutch programs, German and Spanish channels, and others, all in all 16 channels.

To receive ASTRA, one needs a dish, normally 60cm, although Clive Sinclair's new company, Cambridge Satellite has developed a new flat square antenna, two feet by one foot with an embedded feed point inside this 2 inch-thick square. You then get an a LNB (low noise block) which translates the 11GHz to 950MHz, a polarizer which translates vertical and horizontal signals feeding them to a receiver inside the house.

A typical antenna of 60cm has a gain of about 35db, plus the gain of the LNB which is another 55db brings you amazingly clear picture, indistinguishable from your "banal" terrestrial channels. The receiver further converts the 950 - 1750 MHz signals to a UHF channel of your choice.

All this for a measly 199 UK pounds for the basic Amstrad satellite system (about \$295). Complete. With dish, receiver

and LNB. All you need to do is add a TV!

MIDDLE END TVRO GALORE

Although for some people receiving ASTRA is a highlight in their lives, others (such as this writer) choose alternate systems.

I chose the Tristar SR-2500 system which offers 100 channels, tuning from 10950 to 11750 GHz, 11 audio subcarriers, one of which is fully tunable, stereo, multiple types of polarizers and more.

I needed this system because watching Discovery (a natural history/science program which appeals to an entire family), The Children's channel which appeals to the kids, CNN which appeals to me, as well as watching TV stations feeds is what I like watching. I point my dish on Intelsat.

That monster of a satellite also carries up to 16000 phone conversations simultaneously, maritime communications channels and other goodies.

The SR-2500 can be programmed through the entire Ku band, sports a 65cm offset dish (more on this later) and a low noise LNB.

HIGH END TVRO GALORE

If you have money, in some case the same amount for US type, C band systems, you can get the best.

Steerable antennas, multi satellite positioners, 999 channels, the works. The cost, about 2000 UKP (about \$3000). Many bars, restaurants and similar establishments buy these systems. You then have access to an amazing 63 channels!

WHAT ABOUT HAMS?

Having access to such cheap technology is what every ham dreams about. And there is alot you can do with it for your ham hobby.

LNBS AND DOWNCONVERTERS

LNB (low noise blocks) integrate a Low Noise Amplifier, made of Gallium Arsenide and a down converter in the same small shell. The gain is a typical 58db. You can receive signals in the

10GHz to 12GHz segment (broadband) and convert it down to 1GHz segment.

Tuning to the channel on 10020 brings the IF signal down to

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902MHz. Does that number sound familiar? Well that is the not-very-much used ham band.

You can thus get TV pictures from the 10GHz band.

Taking the LNB out of the circuit, you then have a 950 to 1750MHz TV receiver with multiple sound and video interfaces. You can then receive 1296 MHz ham band TV stations. Not bad for a \$300 investment.

The LNB supplied with the SR-2500 has the following specifications:

Input frequency range:	10.95 - 11.75GHz
Output frequency range:	950 - 1750 MHz
Gain:	58db typical
Noise figure:	1.6db maximum
Output impedance:	75ohm
Temperature range:	-30 to +50C
Power requirements:	+15 and +24 V DC

The dish is another delight. Most of these cheap dishes are offset. That means that the actual feed is not in the center of the actual dish but at an offset position, outside the receiving portion. This ensures that the maximum signal reaches the LNB.

The dish supplied with the SR-2500 has the following specifications:

Frequency:	10 to 13 GHz
Gain:	35 to 37.5 db
Cross Polar protection:	29db minimum
Minor axis x major axis:	65 x 75 cm
Weight:	7.5kg (about 16lb).

WHAT CAN YOU WATCH (if you need TV coverage)

In Europe you can watch the following satellites:

ASTRA 1A(parked at 19E)
ASTRA 1B and 1C
INTELSAT (five of these)
EUTELSAT (four of them)
ITALSAT
SICRAL
ARABSAT
SICRAL
DFS-1 and 2
TELECOM
SYMPHONIE
LUXSAT
IMMARSAT
SARIT

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and many others

In the US you can get:

VIDEO SAT
RCA (many of these)
WESTAR (many of these)
AMERISAT
SATCOM (many of these)
USAT (many of these)
COMSTAR (many of these)
SBS
and many others

ALL OF THE ABOVE TRANSMIT IN THE 11GHz band

SUMMARY

Welcome to TVRO. The cheap variety. They are extremely useful and have given me much pleasure. It is amazing what you can do with something so useful and so inexpensive. Economies of scale. That's what hams need.

ADDRESSES

TRISTAR-2500, sold by TBC Satellite systems, 814 Newport road,
Rumney, Cardiff, UK, tel: +44 222 77 9964, Fax: +44 222 790853

AMSTRAD, Brentwood house, 169 Kings road, Brentwood, Essex, UK,
Tel: +44 277 22 8888.

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AMSAT/OSCAR Info from N4HY Robert McGwire

Q: Is there now in orbit or will there be a packet node on an
OSCAR satellite?

On Jan. 11, 1990 at 0135 UTC we will launch six amateur radio
satellites on board an Ariane 4 along with the primary payload,
Spot-2. Three of the satellites are dedicated to packet radio
experiments. Two Microsats, PACSAT and LUSAT are store and
forward packet radio satellites designed and built by AMSAT-NA.
AMSAT-LU designed an experiment for, paid for, and send LU7JCN
to the states to work on LUSAT. We in fact exploited his great
talent and he worked on all the spacecraft. The other packet
radio payload is UOSAT D which is designed and built by the
folks who brought you OSCAR 9 and 11, the space engineering unit

at the the University of Surrey in Guildford, Surrey, England. The other two microsats carry other experiments as their primary payloads, but again, they are packet oriented systems with all telemetry and experiment data being sent down to earth on packets. The DOVE microsat is an educational payload. DOVE stands for Digital Orbiting Voice Encoder. I am the primary experimenter onboard that payload and it was built for and paid for by PY2BJ0, Junior de Castro a philanthropist and long time AMSAT supporter from Brazil. This satellite will talk to earth in synthesized voice. It also has a D/A and can reproduce digitized waveforms. For those of you with REGULAR unmodified TNC's this bird may be your entry into packets from space. It transmits is digital information, telemetry, etc. down to earth in regular BEL-202 tones just like regular tnc's. The frequency for this bird is 145.825 Mhz. It carries a powerful FM transmitter and should be easy copy (by ear) on a HT with a rubber duck. If you want to decode data you should have a slightly better antenna. The final satellite, and by no means the least, is WEBER. This bird carries a color CCD camera. It has a flash digitizer board which is triggered by a vertical sync and then captures a single frame in its memory. This set of digitized picture elements will be sent down on AX.25 UI frames (beacon frames) on 437.075 or 437.100 using binary PSK (standard TAPR-PSK, or G3RUH psk modem) at 1200 BPS or 4800 bps. At beginning of life, it will be strictly 1200 bps.

I will turn on all four spacecraft at about 0300Z as the spacecraft cross over the equator going north. This orbit will carry the satellites over the panhandle of Florida and northward over the eastern US. The next orbit over the US will occur around 0530 UTC and will go up over west Texas, Colorado, etc. The next will be just off the west coast. I will be posting a set of group elements that ought to be good for all seven payloads for at least the first two weeks, here and on other forums.

Bob

Meteor Showers - 1990, W1JR

1990 Meteor Shower Peak Times
Thanks to Joe Reisert, W1JR

Peak Times for 1990 Meteor Showers

Shower Name	Date	Peak (UTC)	Duration	Accuracy
-----	----	-----	-----	-----
Quadrantids	03 January	1145	14 hours	15 minutes
Lyrids	22 April	0441	2.3 days	12 hours
Eta Aquarids	05 May	0612	3 days	12 hours
Piscids	05 May	1913	?	?
Arietids	07 June	1253	8 days	12 hours
Zeta Perseids	09 June	2136	?	?
Delta Aquarids	29 July	0818	7 days	12 hours
Perseids	12 August	0625	4.6 days	75 minutes
Orionids	21 October	0145	2 days	12 hours
Taurids	03 November	1457	20 days	12 hours
Cassiopeids	03 November	1430	?	?
Leonids	17 November	0804	4 days	12 hours
Geminids	13 December	1204	2.5 days	12 hours
Ursids	22 December	1530	2.2 days	12 hours

Amateur Service Depts. - Pete Kemp, KZ1Z

AEA	Customer Service	(206) 775-7373
Alinco	Customer Service	(213) 618-8616
	FAX	(213) 618-8758
Ameritron	Service	(419) 531-3024
Azden (Am Whole)	Customer Service	(404) 769-8706
	Repair (from 2-4 pm only)	(404) 769-8706
	FAX (from 7 pm - 10 am)	(404) 769-7970
B & W	Customer Service	(215) 788-5581
Butternut	Service/parts/tech info	(512) 398-7117
Cushcraft	Service/parts/tech info	(603) 627-7879
ETO	Customer Service	(719) 260-1191
	FAX	(719) 260-0395
Hy-Gain	Rotor Parts	(402) 465-7021
	Antenna/Tower/parts	(402) 465-7022
	Technical Assistance	(800) 328-3771
ICOM	Service	(206) 454-7619
	Parts	(206) 454-8155
	FAX	(206) 454-1509
JRC	Customer Service	(212) 355-1180
Kenwood	Service	(213) 639-7140
	Parts	(213) 639-9000
	FAX	(213) 609-2127
MFJ	Service/parts	(601) 323-5859
Telrex	Customer Service	(201) 775-7252
Ten-Tec	Service/parts	(615) 453-7172
Yaesu	Service	(213) 404-4884
	Parts	(213) 404-4847
	FAX	(213) 404-1210

Free HAM IBM files by mail - KB9BVN

The following is a list of all the Ham, and SWL files that I have available on my BBS. I am making these files available via mail to anyone that would like something listed here. To get files by mail, just follow the simple instructions listed below.

Step 1: Send a POSTAGE PAID return disk mailer to the address listed below. I can not afford to pay the postage since I am not charging anything for the distribution of these files. The formats that I support are 5.25 in 360K, and 3.5 in 720K formats. Please FORMAT your own disks as this saves me time. Include the names of the files that you are asking for.

Step 2: Mail this packet to Brian Murrey
PO Box 47453
Indpls., IN 46247

Step 3: Wait for the mailman.

I have scanned all of these files, and they all appear to be up to snuff. Many of the text files have appeared previously in back issues of the Fidonet Ham/Packet Digest. These files are however offered without warranty from Brian Murrey and the SouthSide BBS system. If you break it, you own both parts. These files have been accumulated from user uploads, downloads from various Bulletin Board Systems, and from the actual authors of many of the software packages. The files are for IBM and IBM compatible systems only. Most require MS DOS 3.0 or higher to operate.

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Filename	Size (bytes)	Description - BRIEF
=====		
500FREQ.ARC	512	List of Indy drivers frequencies.
AEROHF.LST	8960	Airline freqs for your scanner
AEROVHF.LST	4352	List of IN apts. and frqs.
ANTCALC.ZIP	27216	N4WBE Dipole length calculator
ANTENNAS.1	13507	Antenna tutorial, Pt. 1: general
ANTENNAS.2	10143	Antenna tutorial, Pt. 2: Low HF
ANTENNAS.3	7703	Antenna tutorial, Pt. 3: Middle HF
ANTENNAS.4	11452	Antenna tutorial, Pt. 4: UHF/VHF
AWARDDDB.ARC	8192	Database for tracking Radio Awards
BDS201.ZIP	26458	Broadcast Data Services Toolkit
CELLPLAN.TXT	29031	FCC cellular freqs.
CHART.ARC	19103	Makes scanner frequency charts

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CODEFREE.ZIP	13479	ARRL's plan for NO-CODE license!!
CORDLESS.ARC	978	Cordless Phone freqs
COUNTY12.ARC	71424	County Hunter's program. NICE!
DB3LOG.ZIP	86400	dbase3 or 3+ ham radio logging pgm.
DUPE.ARC	58368	Contest Log, 2500 per band per mode
DX-MAP.ARC	196608	Propagation predicts per supplied QTH
DXGUID2.ZIP	6377	Guide to DX ing of all kinds

FASTFOOD.TXT	1152	Fastfood restaurant freqs
FCCTEST.ARC	137344	Tests for Nov., Tech, and Gen.
FEDGOVT.ARC	9612	Listing of Fed Gov scanner freqs
FEDGOVT.TXT	23304	Ascii listing of above
FT727R.DOC	3968	Mods for Yaesu FT727R hand held
GEOMNO33.ZIP	141816	New vers..GREAT! CGA,MCGA & Herc.
GRAYLINE.ARC	69318	Calculates Grayline
GRID.ARC	32362	TSR - Calculates Grid Square locations
HAM0101.ARC	40312	Vol 1 No. 1 Ham/Packet Digest
HAM0102.ARC	84208	Vol 1 No. 2 Ham/Packet Digest
HAM0103.ARC	24720	Vol 1 No. 3 Ham/Packet Digest
HAM0104.ARC	20633	Vol 1 No. 4 Ham/Packet Digest
HAM0105.ARC	42832	Vol 1 No. 5 Ham/Packet Digest
HAM0106.ARC	44575	Vol 1 No. 6 Ham/Packet Digest
HAM0107.ARC	35887	Vol 1 No. 7 Ham/Packet Digest
HAM0108.ARC	23518	Vol 1 No. 8 Ham/Packet Digest
HAMBBS.LST	2597	Ham related BBS systems
HAMTECHS.ARC	47104	Tech license testing (BASIC) but good.
HFPACKET.ZIP	14073	List of DIGI's and PBBS on HF
IBMERROR.ZIP	5248	IBM error info.
ILLINOIS.ZIP	10179	Ill. proposed Ham Radio TAX!!
INDREPTR.TXT	1536	List of Cent. IN. 2m freqs.
INDYHAM.TXT	4096	Indy Ham info, clubs, classes, etc
JAPAN.SCH	3584	Schedules of Jap/Eng broadcasts
KAM400.ZIP	157605	KAM PACKET TERM PGM.
KEN-440.ARC	67840	Control Kenwood 440/940 from keyboard
LISTCOUN.ARC	13530	Alpha list of all counties
LOGGR141.ARC	115094	Keeps your station log
MAPS3-5.ARC	44332	Maps for GEOMNO33 program! GREAT!
MBBDOC.ZIP	4203	MBL Packet BBS 2 of 4
MBBIOS.ZIP	28630	MBL Packet BBS 1 of 4
MBL313.ZIP	251114	MBL Packet BBS 3 of 4
MBL320.ZIP	85648	MBL Packet BBS 4 of 4
MN.ARC	232610	Ultimate Antenna Designer
MP.ARC	140611	MINIPROP Vers 2 by W6EL - great!
NASA.ZIP	45056	Saturn & Shuttle pgms.
NETLOG.JAN	44032	SWL Freq List for Jan 89 from SWL Net
NETWORK.ZIP	72334	Circuit analysis program
NOVICE.ARC	56448	Novice license training course
NOVTEST.ARC	43305	Generate Amateur Novice Test
NTS.ZIP	101766	Makes NTS messages a breeze. NICE!
PAC-INTR.ZIP	8548	Mini-Intro to Packet BBSing
PACKCOMB.ZIP	63967	Packet radio comm program
PACKET.ZIP	9398	List of Packet Radio BBS systems
PACKETUT.ARC	10820	PACKET radio tutor
PACKTERM.ARC	4480	TRS80 Model III packet radio program
PACTALK.ZIP	23931	Packet Software for IBM compats
PART97.ARC	45952	Part 97 rules..effective 9/89

PATHMATH.TXT	11264	How many digi's can you work?
PKETCOM.ARC	70656	IBM terminal program for packet
PCOMINFO.ZIP	8699	Info on Packet products from PAC-COMM Inc
PK145COM.ZIP	157646	Great Packet Terminal Program 1.45
PRINTQSL.ARC	1408	Print QSL info on labels
PRO2004.ARC	14775	Mods for RS 2004 scanner!
PROPPLUS.ARC	44774	SWL propagation prediction program.
PTP-1278.ZIP	171162	Term prog for MFJ 1278 Multi TNC
QSOTUTOR.ZIP	84639	Demo of Advanced QSO Tutor by N4CST
QSOTUTR2.ARC	117632	New version of QSO Tutor DEMO
RABBIT.ZIP	4865	Satire-CODE vs. NO CODE
RFTOOLS.ARC	139904	Calculate your RF problems
RLI907.ARC	189952	WORLI Packet BBSware v. 9.07
SCANFREQ.TXT	1737	Indy Scanner Freqs
SENTENCE.ARC	2591	Sentences for side one of ARRL code tape.
SEPTARRL.ARC	1992	Sept. ARRL bulletins, Hurricane Gilbert
SM305.ZIP	96834	10-89 Super Morse code tutor
SMITH.ZIP	4402	Ham Radio Smith charts
SOLARRPT.TXT	559	Dial up NOAA Solar Reports.
SSMAST.ARC	89239	SSMaster Demo contest logger
STORM.ZIP	40452	Hurricane tracking program
SWLBBS.TXT	12288	List of Ham BBS systems
SWLLOG.TXT	6144	SWL log
TESTLOG.ARC	138240	Fantastic contest contact logger!
TOTHM8-1.ARC	226566	New version of Total Ham!
TOTHM8-2.ARC	80624	Data files for new Total Ham users
TOTHM8-3.ARC	231753	Updates old Total Ham data files
TOTHM9-1.ZIP	179200	Version 9 of Total Ham Part 1
TOTHM9-2.ZIP	79872	Version 9 of Total Ham Part 2
TOTLHAMP.ZIP	5500	What's new in Total Ham plus
UNIDEN.FIX	2462	Fixes & mods for Uniden 10 m xcvr
USA-DIGI.ARC	25387	List of US digipeters by city
USA-PBBS.ZIP	15600	List of US PBBS systems by State
USATLAS1.ZIP	103294	US Atlas pt. 1 (Great)
USATLAS2.ZIP	280459	US Atlas pt. 2 (Need both)
VHFPROP.ZIP	121887	VHF/UHF propagation progs
VSWR.ARC	36536	Does SWR calculations
WORLIBBS.DOC	14848	How to use Packet mailboxing.
WW-LISTS.ZIP	270804	List of worldwide Digi's
WX51.ZIP	61696	Weather Program....NICE!
YAPP2.ARC	51616	Packet term prog with YAPP
YESCODE.TXT	8832	Keep the code!

What is Amateur Radio? - Brian Battles

WHAT IS AMATEUR RADIO, YOU ASK...?

Amateur Radio (often called "Ham Radio") is a hobby and an important public service authorized by the U.S. Federal Communications Commission in Part 97 of the FCC Rules and Regulations. It's stated purpose, quoted from SubPart A, Sec. 97.1 is as follows:

"...to provide [a] service...as expressed in the following principles:

(a) Recognition and enhancement of the value of amateur service to the public as a voluntary noncommercial service, particularly with respect to providing emergency communications.

(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

(c) Encouragement and improvement of the amateur radio service through rules which provide for advancing skills in both the communication and technical phases of the art.

(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.

(e) Continuation and extension of the amateur's unique ability to enhance international goodwill."

Licensed Amateur Radio operators are people of any age, sex,

profession, or nationality who are fascinated with communication via two-way radio. Generally a skilled group, they are required to pass examinations to receive the authorization to operate an Amateur Radio station.

The typical Amateur has a variety of interests, and the hobby provides for a multitude of individual preferences. Amateurs engage in general chit-chat; emergency operations (including participation in Civil Preparedness); sending, relaying, receiving, and delivering free Radiograms for the public; providing communication support for civic functions such as local parades, marathons, etc.; making friends with Amateurs in foreign countries; investigating the mysteries of radio signal propagation; building, modifying, and designing radio equipment, antennas, and accessories; winning awards for operating proficiency in many areas; helping others prepare for Amateur Radio FCC license examinations; and many more exciting and valuable facets of the hobby.

The FCC grants five classes of licenses to operate Amateur Radio stations, each requiring the candidate to demonstrate progressive levels of ability and knowledge. The license Classes are as follows (from lowest to highest), each

successively allowing greater operating privileges and access to more usable radio frequencies):

For most persons, the initial license is Novice operator. It requires the applicant to pass an elementary written test and to demonstrate the ability to understand Morse Code when sent at just 5 words per minute (wpm). Novices are authorized to use the following radio frequency ranges, or "bands" (bands are often referred to by their approximate wavelength, as well as by frequency): 1.25 meters (222.1-223.91 MHz), 23 centimeters (1270-1295 MHz), 10 meters (28.1-28.5 MHz), 15 meters (21.1-21.2 MHz), 40 meters (7100-7150 KHz), and 80 meters (3700-3750 MHz) bands. The Novice license examination is administered by two Volunteer Examiners (VE's). These may be any Amateur Radio operators who hold a current General, Advanced and/or Amateur Extra operator license. There is no charge for taking the Novice class examination.

The second step up the ladder is the Technician operator. Another written examination, Element 3(A) is required. This

license authorizes privileges on all Amateur bands from 6 meters (50 MHz) on up to 248 GHz, plus all Novice privileges.

The third step up the ladder is General operator. Another written examination, Element 3(B) must be passed, as well as a test to demonstrate the ability to understand Morse Code at 13 wpm. This license authorizes the use of designated portions of all Amateur service frequency bands.

The fourth step up the ladder is Advanced operator. Another written examination, Element 4(A) is required. This license authorizes additional frequency privileges on Amateur service high-frequency (HF) bands, from 1.8 to 30 MHz.

The final step up the ladder is Amateur Extra operator. Another written examination, Element 4(B) and 20 wpm Morse Code proficiency is required. This license authorizes ALL Amateur Radio privileges and frequencies, including additional frequencies in the Amateur service HF bands.

For all licenses above Novice operator, the examinations are administered by at least three local Amateur operators serving as Volunteer Examiners (VE's). They provide information as to when and where examination sessions are being held. Their efforts are coordinated by a Volunteer Examiner Coordinator (VEC). The VEC makes public the questions used in the written examinations. Study aids are available from many Amateur Radio publications and equipment dealers. The administering VE's may charge the candidate a fee as stipulated by the FCC for certain reimbursable expenses incurred in preparing, processing, or administering the examination (currently \$4.95 per exam session, regardless of how many Elements are taken).

Many licensed Amateurs enjoy joining and participating in local Amateur Radio clubs. These clubs provide comradeship,

coordinate special activities, support members via exchange of information, and often have members who conduct free FCC exam preparation classes for people interested in getting licensed.

Amateur Radio is a versatile and flexible hobby. Some people get on the air with minimal equipment, home-building, borrowing, or purchasing used transmitting and receiver gear for very low costs. At the other extreme, Amateurs can easily invest tens of

thousands of dollars in the latest transceivers, antennas, towers, computers, accessories, and other gadgets that reflect the top equipment from major manufacturers. Most Amateur Radio stations fall somewhere between the two. Amateurs tend to collect, swap, and sell gear and over the years and may accumulate an impressive setup for a relatively low cash outlay.

Anyone interested in becoming involved with Amateur Radio can find out more very simply by contacting the American Radio Relay League (ARRL). This is the leading nonprofit organization dedicated to Amateur Radio, and is made up of thousands of members all over the United States. You can also look through local hometown newspapers for listings of local Amateur Radio club meetings; knock on the door of anyone whose home sports a bizarre array of radio antennas; or contact me via E-mail or post a message on this BBS.

Amateur Radio is a truly unique and thrilling avocation that can give years of unforgettable pleasure and allow you to serve your community in a very distinctive way.

FOR INFO CONTACT:

ARRL
225 Main Street
Newington, Conn. 06111
Voice (203) 666-1541
BBS (203) 665-0090 Sysop: Luck Hurder, KY1T

GETTING INTO AMATEUR RADIO
(especially for you "young'uns")
By Brian Battles

If you think you may not be able to get too involved in Amateur Radio right now because you can't afford the fancy gear, let me point out two facts:

1) Just getting licensed won't cost you anything ('cept if you get a license of a class higher than Novice--which I highly recommend--simply because the higher class licenses must be given by Volunteer Examiner teams, and they usually charge candidates the FCC-regulated maximum of \$4.95 to cover the costs of providing exam materials; not for their own profit or gain!).

2) Believe it or not, you can get on the air and have a ball on a shoestring! Lots of Amateurs get their first rig as a loaner/gift/cheap sale from other Amateurs who have accumulated spare equipment. In fact, I only "bought" my first radio last year, for around \$400; until then, I used borrowed/giveaway jobs, and maybe spent a total of \$40 on Flea Market used stuff (over a 10-year period!). And I've been a licensed amateur since 1976.

And, by the way, if you're relatively young and unencumbered by a spouse, kids, full-time jobs, excessive outside commitments, etc., this is an IDEAL time for you to invest in getting your license. It will probably take you all of a month (or less) to study the Morse Code and theory to pass your Novice exam, if you can COMMIT to putting in two 20-30 minute sessions per day. (Maybe an extra week or two to get the Technician class stuff down, but it's worth it for the additional privileges.)

Just think: You set a goal of being licensed by, say, the first of April...you study/practice Code twice a day every day 'til then...you successfully pass your exams...the FCC issues you your license (that'd probably get to you by mid-May)...and from then on, FOR THE REST OF YOUR LIFE you are a bona-fide, official, licensed Amateur Radio operator!!! You could certainly study more later on and upgrade to a higher class of license, but that's entirely up to you.

Imagine how proud you'll be, how much fun you'll have (I guarantee that some other Amateur will at least loan you an old

rig to get on the air), and when you hit 35 years old and don't see how you could possibly sit around learning the stuff to pass an Amateur license exam, you'll be able to smile and say, "Hah! Lucky for me I DID IT already, years ago!"

Oh, yeah, one more reason to get your license NOW: It appears that, in general, the younger you are, the easier it is to learn Morse Code. Obviously, anyone who determines to do it CAN, but young folks' brains haven't solidified so much yet, and they seem to pick it up in a flash.

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If you want to, or ever think you're GOING TO want to, operate in Amateur Radio, take my advice: nail down that license NOW!

You'll thank me someday!!

SAREX2 - Packet on the Space Shuttle - W3IWI

1990 is going to be a vintage year for amateur packet radio in space. This month will see the launch of the four AMSAT Microsats plus two UoSATS (look for @AMSAT bulletins on you local BBS).

Then in late April one of our MDC area astronauts, Ron Parise, WA4SIR will fly on the Shuttle Columbia in mission STS-35. Ron will be carrying 2M packet radio hardware with him -- a modified HK-21 TNC, a Motorola HT, a window-mounted antenna and a Grid lap-top computer.

The TNC will be carrying special software -- an updated version of the SAREX "Robot" that would have flown in 1986 had not the Challenger disaster happened.

The "Robot" software is an automatic QS0 machine. You connect to the robot, you are given a serial number, and as soon as you ack the number, the Robot disconnects and enters the QS0 into the log. As many as nine simultaneous QS0s can be going on. If the robot hears you, whether or not you make a full two-way QS0,

that information is entered into a second log.

You and the world know immediately if you had a QSO or were heard, because periodically the robot sends out beacons. A beacon addressed to QSL> lists the two-way QSO's and the serial number, and a beacon addressed to QRZ> lists the stations heard.

In addition, the robot has an additional beacon (called the Metabeacon) addressed to QST> which has up to 7 frames of up to 255 characters/frame (i.e. about 1.7 kbytes). This is intended to serve as a longer general information beacon into which Ron can put mission status information.

N2WX and I have worked hard this past weekend to get a "beta" version of the flight TNC software working, and we are ready to test it. The SAREX goodies are now operating from here under the call W3IWI-5 (alias SAREX) on 145.05 using the same radio as the 145.05 W3IWI BBS port. The QST, QSL and QRZ beacons fire every 5 minutes.

Please give the software a shot. Try to crash it! It is a lot better to it die now than in flight!

73, Tom

Amateur radio vs. Citizen Band

AMATEUR RADIO vs. CB RADIO

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Amateur Radio and Citizen's Band (CB) are two systems of two-way communication regulated and authorized in the United States by the Federal Communications Commission (FCC). Amateur Radio licensees are sometimes informally called "hams."

USES PERMITTED

Amateur Radio: Noncommercial public service-oriented communication service. Hobby and experimental communications. Home computing by radio. Emergency and routine public service. Providing reliable two-way radio contact for special community events and activities. Transmission and delivery of free Radiograms on behalf of the general public.

CB: Business and casual conversations. Public aid channel for emergencies.

OPERATING RANGE

Amateur Radio: Unlimited. Amateurs have communicated with orbiting astronauts. International communications are commonplace.

CB: Limited by Federal Law to less than 150 miles. CB users typically talk within less than 4-5 miles.

FREQUENCIES OFFERED

Amateur Radio: More than two dozen Amateur frequency bands are spread across the entire airwave spectrum, from 1.8 kHz to 250 GHz.

CB: One frequency band of 40 channels, from 26.96 to 27.41 MHz.

POWER PERMITTED:

Amateur Radio: Up to 1,500 watts, if needed. Essentially unlimited antenna height and configuration.

CB: Less than 5 watts. Antenna height is limited by Federal Law.

LICENSE REQUIREMENTS

Amateur Radio: Tests for technical knowledge, operating rules, knowledge of Morse Code. Exam difficulty progresses by license level.

CB: Permit no longer necessary. No exams.

HOW TO TELL WHO IS WHO

Amateur Radio: Government-issued call signs indicating country/zone of operator, as well as personal identification. Formal station identification is required at frequent intervals. Operators also typically identify themselves in ordinary conversations using their real names. Most states offer licensees special Amateur Radio call sign license plates.

CB: No formal system of identification. Users typically identify themselves by aliases or "handles".

SIGNALS ALLOWED

Amateur Radio: Voice, Morse Code telegraphy, digital computer data, telemetry, and visual images using FM, AM, continuous-wave, single sideband, personal computers, teletype, television, satellite, repeater, relay, modulated light beams, and spread-spectrum.

CB: Voice only on AM and single sideband. Wireless control of hobby gear.

AUTHORIZED EQUIPMENT

Amateur Radio: Users can design, construct, and experiment with home-built equipment and they can modify, overhaul, repair, and improve store-bought gear.

CB: Federal Law prohibits any adjustment, modification, or repair by users.

MAIN ATTRACTION

Amateur Radio: Ability to experiment by radio, home computer, and television. Local, regional, and worldwide communications; enhancement of international goodwill. Public service. Mutual cooperation between licensees. Voluntary self-regulation by common tradition.

CB: Avoiding speed traps. Motorist pastime. Neighborhood contact. Enjoyment limited by profanity, low power, discourtesy, and interference.

JOURNALS, CLUBS, AND GROUPS

Amateur Radio: American Radio Relay League (ARRL), national nonprofit membership association. International Amateur Radio Union (IARU). Over 2,000 clubs throughout the country. Several major national publications.

CB: Some local clubs. Emergency group REACT found in some

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areas. No national publications.

For more information on Amateur Radio, contact the ARRL at 225 Main Street, Newington, CT 06111; telephone (203) 666-1541. Or call the ARRL HQ BBS at (203) 665-0090 [2400-8-N-1].

